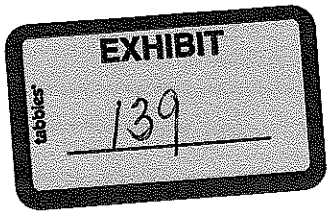


Carya Ecological Services, LLC

183 Guinevere Ridge
Cheshire, CT 06410
(203) 271-1949
Sigrun.gadwa@sbcglobal.net

TESTIMONY

TO THE DEPT. OF ENVIRONENTAL PPROTECTION, WATER RESOURCES

PROPOSED STREAMFLOW STANDARDS AND REGULATIONS

(NOTICE 10/13/09)

JANUARY 28, 20010

January 28, 2010

Paul E. Stacey
Bureau of Water Protection and Land Reuse
Connecticut Department of Environmental Protection
Planning and Standards Division
79 Elm Street
Hartford, CT 06040

Dear Mr. Stacey:

Thank you for the opportunity to comment. I was asked to comment on the proposed regulations by the Quinnipiac River Watershed Association. After reading them, I find myself gravely concerned, as a wetlands professional. Following are comments, some positive, but most pointing to the need for considerable additional work on the regulations before they will be consistent with the directives of Public Act 05-142. I hope some language can be added and that they can be passed, despite these problems. A brief summary of my relevant experience and qualifications is appended.

1.0 EXECUTIVE SUMMARY

1. The regulations entirely ignore dilution issues in relation to diversion, for both NPS and treatment plant pollutant/nutrient loads; increased vulnerability to more concentrated pollutants/nutrients and temperature stress during summer low flow periods has always been a major consideration for individual diversion permits, especially for the more impaired watercourses. These regulations should dovetail with the proposed water quality regulations.

2. The proposed regulations seem to assume that the greater the hydrologic impairment, the lower the vulnerability to withdrawal; at least during certain

seasons it may often be the reverse! If water quality is in fact impaired as well as hydrology, adequate volume will be needed for pollutant and nutrient dilution. I realize the intent is not to harm high quality native trout habitats, but the proposed regulations seem to be skewed against warm water/lower river aquatic communities. Native trout thrive in a wide range of watercourse size classes.

3. Impacts to riparian wetlands are not adequately covered. Large impaired rivers often have well developed floodplain slough systems. Groundwater fed wetlands in aquifers associated with watercourses may be critical oligotrophic wetland habitats.

4. Field-verification and impacts analysis needs to be part of the initial classification process, especially for impaired reaches, to identify river-reaches that need an individualized flow management plan based on anticipated impacts from a withdrawal program using the standard bio-period adjusted diversion caps for the proposed class; also to assess the reach's restoration potential, and potential for higher withdrawal rates. Verification must be based on site-specific analysis (including recent biological and correctly collected water quality data), collected both above and below likely pollutant sources. Such analysis would verify that results of implementation of the withdrawal caps for the proposed class would indeed conform to the proposed Narrative Standards in the stream flow regulations and the Anti-degradation Policy in the Water Quality Standards.

5. Language Associated with the proposed open-ended "write-off" Class 4 has very little detail and does not at all seem consistent with the Connecticut Wetlands Statute or the Public Act -5-132. It should be combined with Class 3.

2.0 Scope of Regulations

It is vital to regulate both groundwater withdrawals, and diversions from non-stocked as well as stocked surface waters to minimize adverse flow impacts. However, language needs to be added to the proposed regulations that explicitly states that riparian and floodplain wetlands are included as protected resources, as part of the aquatic riverine system. Wetlands that are vulnerable to being dried up by well field pumping or to substantially reduced winter and spring over-bank flooding are protected in the current regulations for individual diversion permits, but not explicitly mentioned in these proposed regulations.

3.0 Bioperiods

The regulations' use of bio-periods allows for withdrawal programs that are fine-tuned and mimic natural hydrology, while maximizing the total amount can be that withdrawn through the year. This reduces ecological impact during the summer "rearing and growth" period. Extensive USGS flow data and modeling tools are also very helpful. Regulations for dam releases follow incorporate the bio-periods principle and appear to be carefully thought out and an improvement over the status quo.

4.0 CLASSIFICATION SYSTEM:

4.1 CLASS 4

This item is a serious concern. Language associated with Class 4 is very vague as to what will or will not be permitted; the "narrative standards" afford no protection to the remaining aquatic life and wildlife. The class either needs to be removed (combined with Class 3) or substantial additional language added. A set schedule of allowable diversion limits would certainly not be appropriate for this class. As explained below, set withdrawal caps are also highly questionable for Class 3 (moderately impaired systems).

Language should call for analysis of sources of impairment and potential to restore to some ecological function, and analysis of alternative withdrawal approaches with differing impacts. Note that even if aquatic life is limited to a few pollution tolerant species, these are still to be considered, under Public Act 05-142. A Class 4 River may feed into an estuary such that biological pollutant removal functions continue to be important. Production export and nutrient transformation functions can be high even in a low diversity system. Streams that with severely impaired flow patterns, but with good water quality, may support diverse invertebrate and amphibian fauna with life cycles geared to the existing disturbed hydrologic regime, but nevertheless highly vulnerable to further flow reduction.

4.2 COOKIE CUTTER WITHDRAWAL LIMITS

Minimum diversion rates will be arbitrarily being based on the level of hydrologic impairment, rather than on a stream or river's site-specific water quality and ecological conditions/vulnerabilities. Vulnerabilities among impaired streams vary widely! This cookie cutter approach has the potential for substantial adverse impacts to the natural aquatic life and associated wildlife of Class 3 streams, inconsistent with

Public Act 05 142. Even some Class 2 streams[1] are on the cusp between perennial and intermittent, such that withdrawal at the 25% level in the summer low flow period could significantly reduce aquatic insect diversity, eliminating perennial species such as stoneflies.

The regulations should be modified to take into account the fact that clean ground water and tributary water does dilute water pollutants. If a stream is at or close to the threshold for impairment by water quality for several species, allowing withdrawal of 50% (Class 3 rate) rather 25% (Class 2 rate) of the weighted Q_{99} (flow) figure will worsen the situation! The level of treatment required by a treatment plant to meet water quality standards could increase, resulting in higher costs for towns. For many hydraulically impaired rivers and streams with adequate water quality, the proposed limits are likely to work well, but site-specific analysis is needed to field-verify this. Monitoring at several locations along the reach can help find the place for a well or withdrawal pipe where the impacts will be lowest, e.g. where the aquatic community already has only highly pollution-tolerant species, or where point and non-point discharges are already diluted, as below confluence with a clean tributary.

Impacts of reduced dilution of pollutants are omitted from the list of considerations for classification, and as a factor to be used in designing a flow management plan. Note that the wording in the narrative standards (26-141b-4 (a)1, (b)1 and (c)1 "volume to support and maintain habitat", can be assumed to encompass effects on habitat due to reduced dilution, e.g. "volume to [sufficiently dilute water with a pollutant load], to support and maintain habitat (for a variety of aquatic species)."

4.3 FLOW MANAGEMENT COMPACTS

The regulations provide for flow management compacts as an alternative to following classification-based, fixed withdrawal limits. This is a potentially excellent tool. However, the proposed language for developing and approving these compacts will not encourage ongoing or future restoration efforts, or adequately consider ecological

[1] A recent CARYA invertebrate survey of a reach of Fort Hill Brook in Groton, Connecticut on June 12 2009 (for the Groton open Space Association) illustrates the risks of withdrawal based on classification without field verification . Site is ~ 1 mile south (downstream) of I-95, and ~O .5 mi. north of Rt. 1and hydraulically impaired by the highway. Diverse invertebrate community includes highly pollution- sensitive taxa (e.g. perlodid stoneflies, ephemerellids); also abundant & diverse case-caddisflies (5 taxa), tabanids and tipulids, all tolerant of brief summer dry periods, but not extended drying. Fish missing, perhaps due to a 10-foot waterfall, which is a fish barrier. >10 salamander egg masses had been found in April in April and many more in pools flooded by brook overflow in winter. Stream was 15-20 feet wide, averaging 6" deep at time of survey. Water quality was very good at survey site but clearly impaired at Route 1, downstream of a condo complex. **Would need to be classified as a Class 3 stream but withdrawal of 50% of flow through the year would clearly have adverse impacts.**

constraints. Site specific, recent biological and water quality data is not even required. Data on infiltration BMP's is to be collected, but language does not direct its use for restoration planning. Minimization of ecological/habitat/ recreation impacts is not included on the list of considerations for the commissioner's approval of a plan. Such minimization should be a top consideration, if the regulations are to be consistent with the Public Act 05-142, and with the Connecticut Wetlands Statute.

Regulations state that "existing biological data" from comparable streams may be used. For a pristine stream, if land uses have not changed, older fisheries and macro-invertebrate data will likely suffice, but especially for moderately to severely impaired streams, supplemental site- specific, recent ecological investigations are essential, often from several parts of the reach, if conditions change along that reach due to point sources, major changes in channel morphology changes, tributary confluences, etc. One needs to find out the habitat & food source needs of the species fish that forage/breed in a particular reach; the proportion of the benthic invertebrate community that can tolerate elevated nutrient and toxicant concentrations (many chironomids) or periods with little or no flow (like some case caddis flies), provided substrate is saturated; whether there are healthy upstream populations that could recolonize, after a dry-up episode. Note that some of this information may be obtained from volunteers at low cost and can be reliable, with professional direction.

Note that the proposed regulations do permit development of a flow management compact that would allow greater diversion from a Class 1 or Class 2 stream. Taking out more than 2% or 25% of bio-period adjusted Q_{99} from a well-shaded healthy small river (Class 1 or Class 2), could indeed be consistent with preservation goals of the Public Act 05-142. But CTDEP could not be sure of this without site-specific biological data and ecological analysis, not called for in the proposed regulations.

5.0 RESTORATION UNDEREMPHASIZED

The considerations for classification in Section 26 141 b 5(a) do not adequately cover restoration potential (limited to anadromous fisheries and restoration constraints, like channelization, in Item 12). Nor does the Section on petitioning to change a classification establish a framework for the process of planning restoration strategies and preparing grant applications. The section on considerations for compact approval (26-141b-5) does not include consideration of restoration of aquatic habitats/ ecosystems, which is supposed to be a fundamental goal in Connecticut, even built into our water quality classification map. Water companies will not have an incentive to restore watercourses, if an upgraded classification would mean that means their water allotment will be sharply reduced – even if in fact it could handle more withdrawal, post-restoration. The incentive to undertake restoration measures in

these watersheds may be reduced under the proposed regulations if the standardized withdrawal caps limit potential benefits from such restoration.

This omission of restoration is striking in view of the major benefits to the Fenton River from restoration and water conservation measures. Switching to wells located further from the river during low flow periods is a strategy applicable to many larger water systems. Larger water companies have the potential to augment flows during critical drought periods, helping maintain biological diversity. Water companies can also undertake restoration with the objective of increasing future withdrawals, by increasing base flow with Low Impact Design (LID) and correcting key pollution sources that need dilution. Detention basins can be retrofitted to better treat storm water and to reduce total discharge volumes during storms.

5.0 NOTICES

All notices should go beyond newspaper announcements, to include town environmental staff, watershed associations, the Association of Wetland Scientists, land trusts, and other conservation organizations. These organizations can help with baseline data collection. Explanatory documents should be available on-line.

6.0 CONCLUSION

I suggest the proposed regulations be amended to require *case by case field verification of the proposed standardized diversion caps, for Class 3 (Class 4 included) watercourses, including recent biological & water quality data; they shall be implemented only if it can be shown that the aquatic ecological community and associated riparian wetlands, both within the reach and downstream, will not be significantly further degraded by reduced flows or by reduced dilution of pollutants and nutrients; they shall be implemented only if it can be shown that that realistic opportunities for future restoration will not be cut off. Otherwise, a reach-specific flow management plan must be developed that does meet these criteria.*

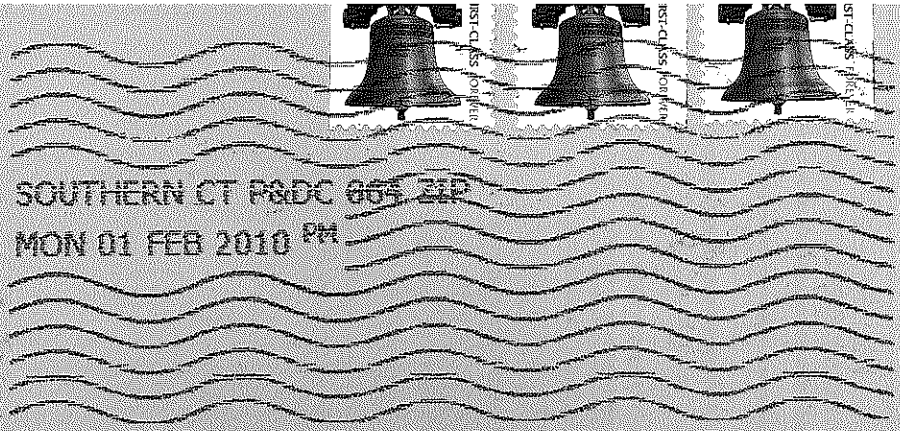
Respectfully submitted,

Sigrun N. Gadwa

Sigrun N. Gadwa, MS, PWS
Ecologist and Registered Soil Scientist
CARYA ECOLOGICAL SERVICES, LLC

Summary of Relevant Qualifications and Experience- Sigrun Nicodemus Gadwa

I am a professional wetland scientist with an MS degree in Ecology from the UConn Storrs (1997), and a BA in Biology from Brown University. I have worked as a private consultant for 10 years, and was Executive Director of the Quinnipiac River Watershed Association from 1995 to 2000. I was Chairperson of the Habitat Workgroup of the Quinnipiac Watershed Partnership from 1997 to 2002, which identified multiple river restoration sites, later restored with grant or other funding. My work has included hundreds of projects involving stream and river bio-assessments, water quality testing, and/or watershed investigations. My CTDEP Scientific Collector's permit includes aquatic turtles and freshwater mussels. I am an experienced botanist, specializing in wetland and riparian habitats, regularly leading trips for the Connecticut Botanical Society



S N Godue
183 Guinevere Ridge
Cheshire, CT 06410

Mr. Paul E. Stacey
CT DEP
Bureau of Water Protection &
Land Reuse
Planning + Standards Division
79 E Elm St
Hartford, CT 06040